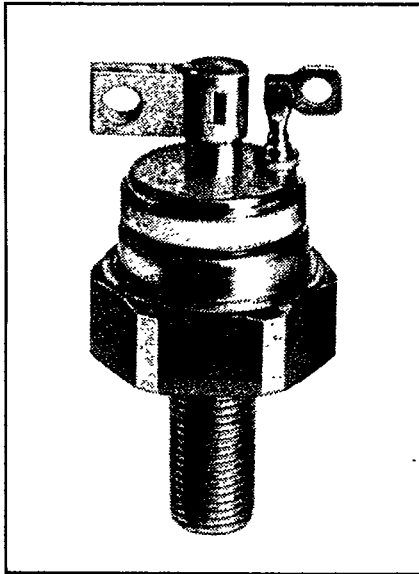
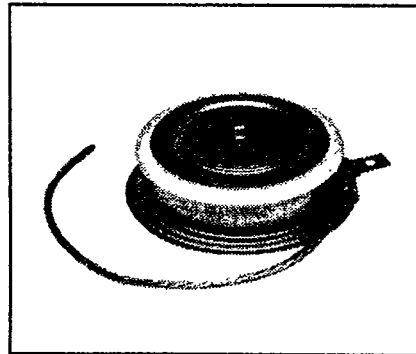


POWEREX**D60T___50/60****D62T___50/60**

Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

**NPN
Power Switching
Transistors****50-60 Amperes****600-750 Volts**

D60T___50/60
NPN Power Switching Transistors
 50-60 Amperes/600-750 Volts



D62T___50/60
NPN Power Switching Transistors
 50-60 Amperes/600-750 Volts

Features:

- Triple Diffused Design
- Compression Bonded Construction/No Solder
- Double Sided Cooling on D62T
- Fast Switching
- 100 kHz Operation
- 200 Amperes Peak

Applications:

- High Frequency Inverters
- Motor Controls
- Switching Regulators
- VLF Transmitters
- Induction Heating Power Supplies

Ordering Information

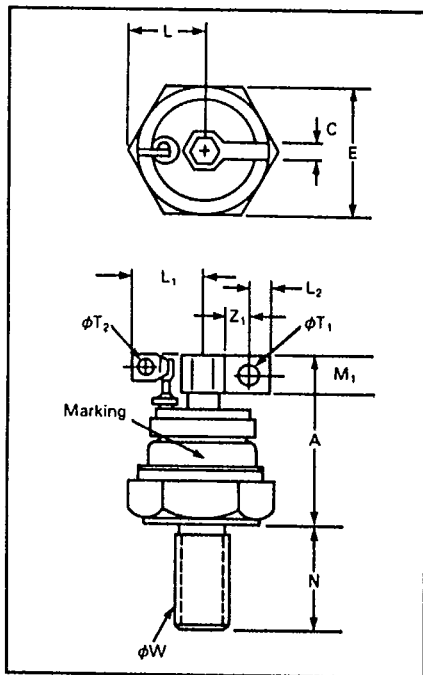
Example: Select the complete ten digit part number you desire from the table—i.e. a D60T656005 describes a stud mount transistor rated at 650 Volts, 60 Amperes, and a gain of 5 at rated current (60 Amperes). A D62T656005 is the same transistor in a disc package.

| Type | V _{CE0(SUS)} Volts(×10) | Current Rating Amperes | Gain |
|------|-------------------------------------|---------------------------|------|
| D60T | 60 | 50 | 05 |
| D62T | 65 | 60 | |
| | 70 | | |
| | 75 | | |

POWEREX

Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

D60T/D62T ___50, D60T/D62T ___60
NPN Power Switching Transistors
50-60 Amperes/600-750 Volts



D60T ___50/60, 600-750 Volts
Outline Drawing

| Dimension | Inches | | Millimeters | |
|--------------------|---------------|-------|-------------|-------|
| | Min. | Max. | Min. | Max. |
| A | | 1.80 | | 45.72 |
| C | .160 | .180 | 4.06 | 4.57 |
| E | 1.212 | 1.252 | 30.78 | 31.75 |
| L | | .812 | | 20.62 |
| L ₁ | | .64 | | 16.26 |
| L ₂ | .155 | | 3.94 | |
| M ₁ | .350 | .450 | 8.88 | 11.42 |
| N | 1.040 | 1.077 | 24.89 | 27.69 |
| phi T ₁ | .193 | .203 | 4.90 | 5.16 |
| phi T ₂ | .145 | .160 | 3.68 | 4.06 |
| Z ₁ | .22 | | 5.59 | |
| phi W | 1/2-20 UNF 3A | | | |

Creep and Strike Distance:

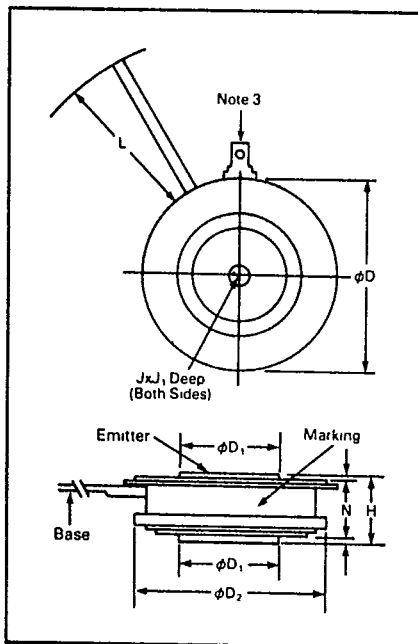
D60T- 17 in. min. (4.3mm).

(In accordance with NEMA standards.)

Finish—Nickel Plate.

Approx. Weight—4.9 oz. (140 g).

- Complete threads to extend to within 2½ threads of seating plane.
- Angular orientation of terminals is undefined.
- Pitch diameter of 1/2-20 UNF 3A (COATED) threads (ASA B1.1-1960).



D62T ___50/60, 600-750 Volts
Outline Drawing

| Dimension | Inches | | Millimeters | |
|--------------------|--------|-------|-------------|-------|
| | Min. | Max. | Min. | Max. |
| phi D | 1.610 | 1.650 | 40.89 | 41.91 |
| phi D ₁ | .745 | .755 | 18.92 | 19.18 |
| phi D ₂ | 1.420 | 1.460 | 36.07 | 37.08 |
| H | .500 | .560 | 12.70 | 14.22 |
| phi J | .135 | .145 | 3.43 | 3.68 |
| J ₁ | .072 | .082 | 1.83 | 2.08 |
| L | 4.000 | | 101.6 | |
| N | .030 | | .76 | |

Creep Distance—.34 in. min. (8.64mm)

Strike Distance—.52 in. min. (13.21mm)

(In accordance with NEMA standards.)

Finish—Nickel Plate.

Approx. Weight—2.1 oz. (60g).

- Dimension "H" is a clamped dimension.
- Base Lead is No. 14 uninsulated flexible stranded wires.
- Emitter tab for 3/16 inch fast-on terminal.



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D60T/D62T___50, D60T/D62T___60
NPN Power Switching Transistors
50-60 Amperes/600-750 Volts

D60T Maximum Ratings

| Characteristics | Symbol | D60T___50/60 | | | | Units |
|--|-----------------|----------------------|----------------------|----------------------|----------------------|---------|
| Operating and Storage Temperature | T_J/T_{STG} | - 65 to 200 | | | | °C |
| Emitter Base Voltage | V_{EBO} | 7 | | | | Volts |
| Peak Collector Current | I_C Peak | 140 | | | | Amperes |
| Continuous Collector Current ^① | I_C Cont. | — | | | | Amperes |
| Continuous Base Current | I_B | 20 | | | | Amperes |
| Linear Power Derating Factor from $T_C=25^\circ\text{C}$ to $T_C=175^\circ\text{C}$ | — | 5.88 | | | | W/°C |
| Thermal Resistance, Case to Sink, Lubricated | $R_{\theta CS}$ | 0.12 | | | | °C/W |
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 0.17 | | | | °C/W |
| Power Dissipation $T_C=25^\circ\text{C}$ | P_T | 885 | | | | Watts |
| Power Dissipation $T_C=75^\circ\text{C}$ | P_T | 590 | | | | Watts |
| Mounting Torque Non-Lubricated Threads | — | 130 | | | | in.-lb. |
| Mounting Torque Non-Lubricated Threads | — | 14.46 | | | | N-M |
| | | D60T6050 D60T6060 | D60T6550 D60T6560 | D60T7050 D60T7060 | D60T7550 D60T7560 | |
| Collector Emitter Sustaining Voltage ^② | $V_{CE(sus)}$ | 600 | 650 | 700 | 750 | Volts |
| Collector Base Voltage | V_{CBO} | 650 | 700 | 750 | 800 | Volts |
| Collector Emitter Voltage $V_{BE} = -1.5V$ | V_{CEV} | 650 | 700 | 750 | 800 | Volts |

- ① Collector current limited by base current.
Base current must not exceed 20 Amperes, RMS,
28 Amperes square wave 50 duty cycle or 40
Amperes peak 1/2 sine wave.
② $V_{CE(sus)}$ must not be measured on a curve tracer.



Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

D60T/D62T___50, D60T/D62T___60
NPN Power Switching Transistors
50-60 Amperes/600-750 Volts

D62T Maximum Ratings

| Characteristics | Symbol | D62T___50/60 | | | | Units |
|--|-----------------|----------------------|----------------------|----------------------|----------------------|---------|
| Operating and Storage Temperature | T_J/T_{STG} | -65 to 200 | | | | °C |
| Emitter Base Voltage | V_{EBO} | 7 | | | | Volts |
| Peak Collector Current | I_C Peak | 140 | | | | Amperes |
| Continuous Collector Current ^① | I_C Cont. | — | | | | Amperes |
| Continuous Base Current | I_B | 20 | | | | Amperes |
| Linear Power Derating Factor from $T_C=25^\circ\text{C}$ to $T_C=175^\circ\text{C}$ | — | 11.11 | | | | W/°C |
| Thermal Resistance, Double Sided Cooling Case to Sink, Lubricated | $R_{\theta CS}$ | 0.05 | | | | °C/W |
| Thermal Resistance, Junction to Case | $R_{\theta JC}$ | 0.09 | | | | °C/W |
| Power Dissipation $T_C=25^\circ\text{C}$ | P_T | 1650 | | | | Watts |
| Power Dissipation $T_C=75^\circ\text{C}$ | P_T | 1100 | | | | Watts |
| Mounting Force | — | 900 | | | | lb. |
| Mounting Force | — | 4.05 | | | | kN |
| | | D62T6050 D62T6060 | D62T6550 D62T6560 | D62T7050 D62T7060 | D62T7550 D62T7560 | |
| Collector Emitter Sustaining Voltage ^② | $V_{CE0(SUS)}$ | 600 | 650 | 700 | 750 | Volts |
| Collector Base Voltage | V_{CBO} | 650 | 700 | 750 | 800 | Volts |
| Collector Emitter Voltage $V_{BE} = -1.5V$ | V_{CEV} | 650 | 700 | 750 | 800 | Volts |

① Collector current limited by base current.
Base current must not exceed 20 Amperes, RMS,
28 Amperes square wave 50 duty cycle or 40
Amperes peak 1/2 sine wave.

② $V_{CE0(SUS)}$ must not be measured on a curve tracer.



Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

D60T/D62T ___50, D60T/D62T ___60
NPN Power Switching Transistors
50-60 Amperes/600-750 Volts

Electrical and Mechanical Characteristics $T_C, T_J = 25^\circ\text{C}$ unless otherwise specified

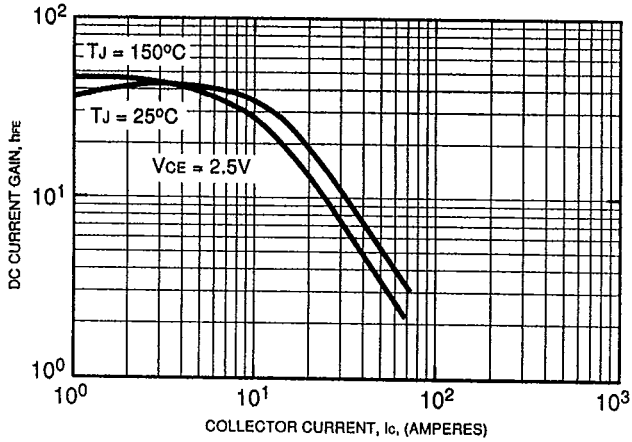
| Characteristics | Symbol | Test Conditions | D60T/D62T ___50/60 | | | Units |
|---|---------------|--|----------------------------|------|------|---------------|
| | | | Min. | Typ. | Max. | |
| Collector Cutoff Current (Base Emitter Reverse Biased) | I_{CEV} | At Rated V_{CEV} $V_{BE(OFF)} = -1.5V$ | — | — | 1 | mA |
| Collector Cutoff Current (Base Emitter Reverse Biased) | I_{CEV} | At Rated V_{CEV} $V_{BE(OFF)} = -1.5V, T_J = 150^\circ\text{C}$ | — | — | 3 | mA |
| Emitter Cutoff Current | I_{EBO} | $V_{EB} = 7V$ | — | 2 | 30 | mA |
| Output Capacitance | COB | $f_{TEST} = 1 \text{ MHz}, V_{CB} = 10V$ | — | 2500 | — | μf |
| Gain-Bandwidth Product | f_T | $f_{TEST} = 1 \text{ MHz}, I_C = 5A, V_{CE} = 10V$ | 7 | 10 | — | MHz |
| D60T/D62T ___50 | | | | | | |
| DC Current Gain | h_{FE} | $I_C = 25A, V_{CE} = 5V$ $I_C = 50A, V_{CE} = 5V$ | 10 5 | — | — | — |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C = 50A, I_B = 10A$ | — | — | 1.7 | Volts |
| Base-Emitter Saturation Voltage | $V_{BE(SAT)}$ | $I_C = 50A, I_B = 10A$ | — | — | 2.5 | Volts |
| Resistive Load | Turn-On Delay | t_d | $V_{CC} = 600V, I_C = 50A$ | — | 200 | ns |
| | Rise Time | t_r | $I_{B1} = -I_{B2} = 10A$ | — | 1.10 | μs |
| Switch Times | Storage Time | t_s | $t_p = 50 \mu\text{s}$ | — | 4.5 | μs |
| | Fall Time | t_f | Duty Cycle < 2% | — | 0.6 | μs |
| D60T/D62T ___60 | | | | | | |
| DC Current Gain | h_{FE} | $I_C = 30A, V_{CE} = 2.5V$ $I_C = 60A, V_{CE} = 5V$ | 10 5 | — | — | — |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C = 60A, I_B = 12A$ | — | — | 1.7 | Volts |
| Base-Emitter Saturation Voltage | $V_{BE(SAT)}$ | $I_C = 60A, I_B = 12A$ | — | — | 2.5 | Volts |
| Resistive Load | Turn-On Delay | t_d | $V_{CC} = 600V, I_C = 60A$ | — | 300 | ns |
| | Rise Time | t_r | $I_{B1} = -I_{B2} = 12A$ | — | 1.20 | μs |
| Switch Times | Storage Time | t_s | $t_p = 50 \mu\text{s}$ | — | 5 | μs |
| | Fall Time | t_f | Duty Cycle < 2% | — | 1 | μs |



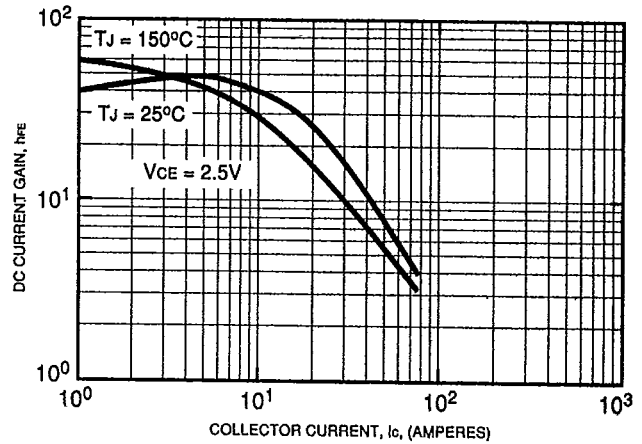
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

D60T/D62T___50, D60T/D62T___60
 NPN Power Switching Transistors
 50-60 Amperes/600-750 Volts

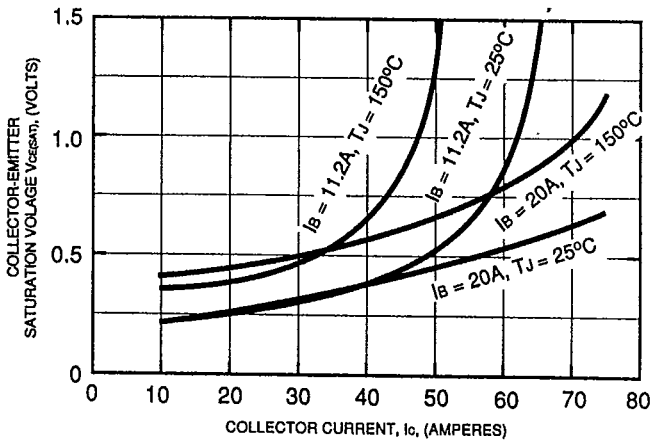
DC CURRENT GAIN (TYPICAL)
 D60T/D62T___50



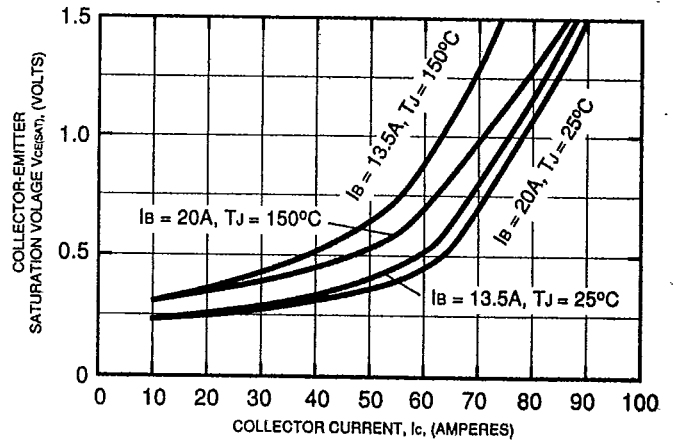
DC CURRENT GAIN (TYPICAL)
 D60T/D62T___60



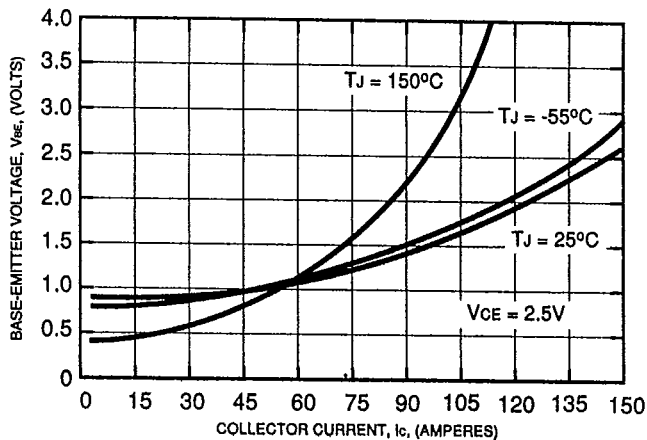
SATURATION VOLTAGE (TYPICAL)
 D60T/D62T___50



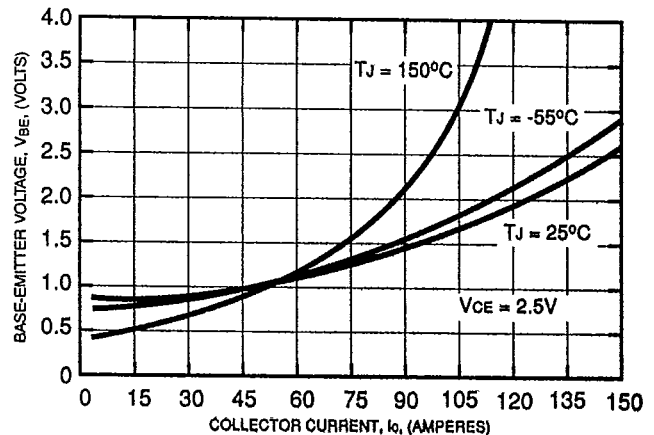
SATURATION VOLTAGE (TYPICAL)
 D60T/D62T___60



TRANSFER CHARACTERISTICS (TYPICAL)
 D60T/D62T___50



TRANSFER CHARACTERISTICS (TYPICAL)
 D60T/D62T___60

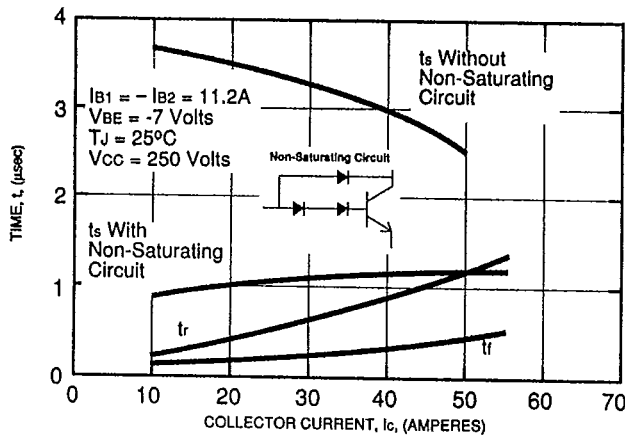




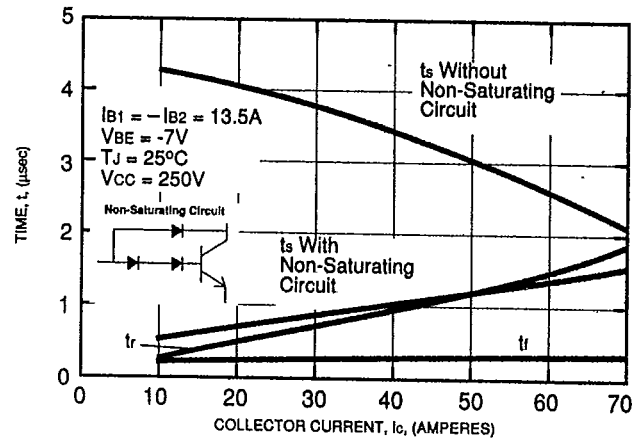
Powerex, Inc., Hillis Street, Youngwood, Pennsylvania 15697 (412) 925-7272

D60T/D62T___50, D60T/D62T___60
 NPN Power Switching Transistors
 50-60 Amperes/600-750 Volts

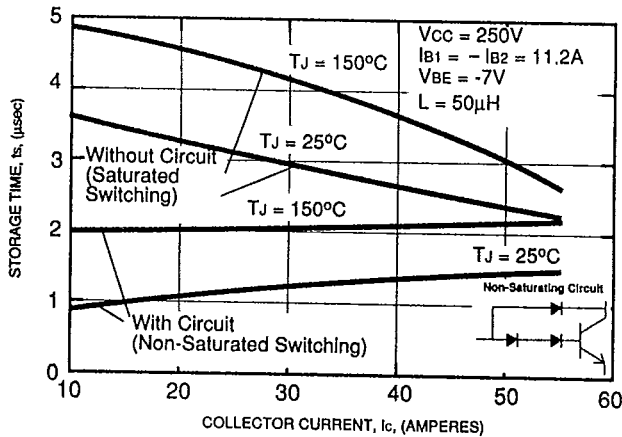
RESISTIVE SWITCHING TIMES (TYPICAL)
 D60T/D62T___50



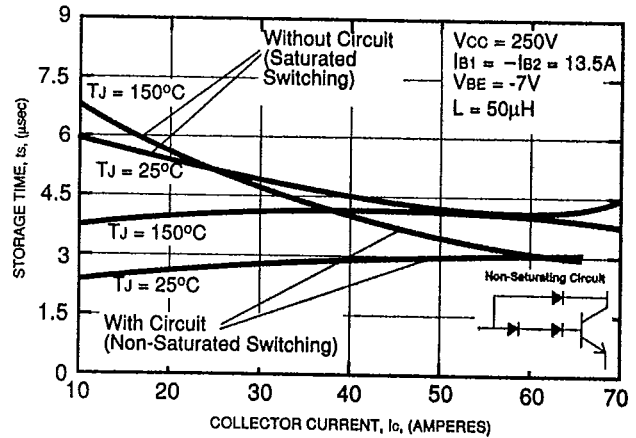
RESISTIVE SWITCHING TIMES (TYPICAL)
 D60T/D62T___60



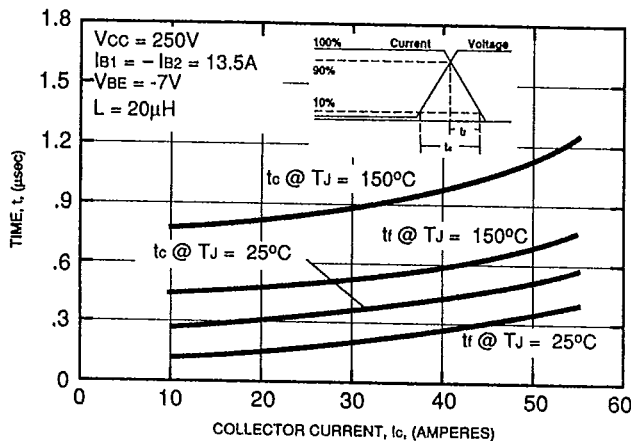
STORAGE TIME FOR CLAMPED INDUCTIVE SWITCHING
 (TYPICAL) D60T/D62T___50



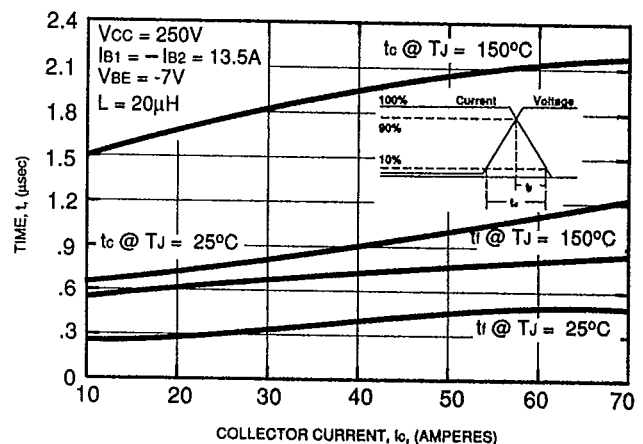
STORAGE TIME FOR CLAMPED INDUCTIVE SWITCHING
 (TYPICAL) D60T/D62T___60



TURN-OFF TIME FOR CLAMPED INDUCTIVE SWITCHING
 (TYPICAL) D60T/D62T___50



TURN-OFF TIME FOR CLAMPED INDUCTIVE SWITCHING
 (TYPICAL) D60T/D62T___60

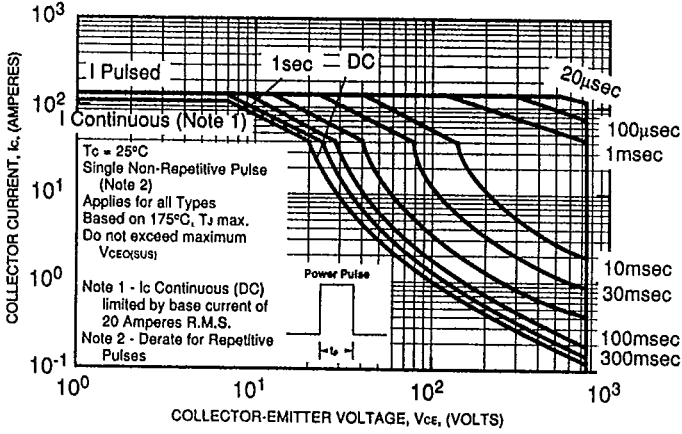




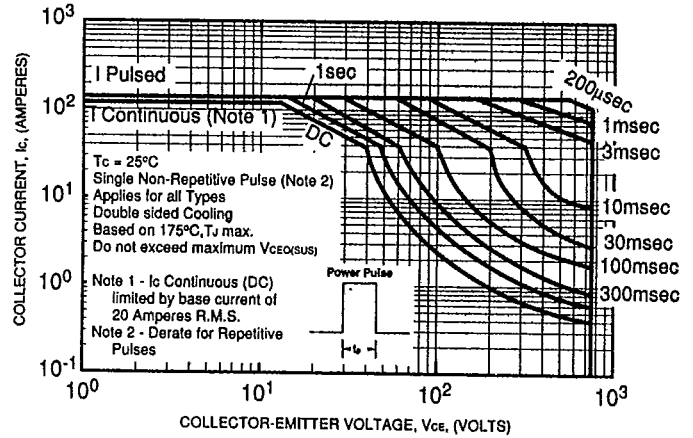
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D60T/D62T ___50, D60T/D62T ___60
 NPN Power Switching Transistors
 50-60 Amperes/600-750 Volts

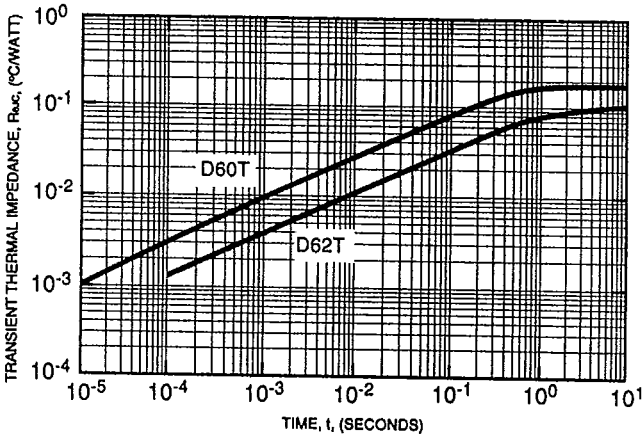
FORWARD BIAS SAFE OPERATING AREA (S.O.A.)
 D60T ___50/60



FORWARD BIAS SAFE OPERATING AREA (S.O.A.)
 D62T ___50/60



TRANSIENT THERMAL IMPEDANCE CHARACTERISTICS
 D60T/D62T ___50/60



REVERSE BIAS SAFE OPERATING AREA (R.B.S.O.A.)
 D60T/D62T

